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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/188,241	11/09/1998	WENZHE LUO	LUO-4	4099

7590 09/30/2003

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EXAMINER
ENGLUND, TERRY LEE

ART UNIT	PAPER NUMBER
2816	

DATE MAILED: 09/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/188,241	Applicant(s) LUO, WENZHE	
	Examiner Terry L Englund	Art Unit 2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 August 2003 and 03 September 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11-14,18,19,21 and 22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,8,9,11,21 and 22* is/are allowed.

6)☒ Claim(s) *13,14,18 and 19* is/are rejected.

7)☒ Claim(s) *2-7 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *04 November 2002* is: a)☒ approved b)☐ disapproved by the Examiner

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment/RCE

The RCE submitted on Sep 3, 2003 was approved and entered. Therefore, the amendment submitted on Aug 1, 2003 was also entered. It was reviewed and considered with the following results:

The amended claims overcame the objections described in the previous Office Action, wherein those objections have now been withdrawn. However, an inadvertent oversight had not previously identified a consistent labeling type objection (i.e. it was not described in a previous Office Action). Therefore, new objections are described later under the appropriate section.

The amended claims also overcame all the rejections under 35 U.S.C. 112, second paragraph described in the previous Office Action. Although those rejections have been withdrawn, the amended change to claim 13 appears to have created a new concern which is described later under its appropriate section.

The addition of an amplifier to the pull-down mirror path, as recited within claim 22, overcame the rejection of claim 22 under 35 U.S.C. 103(a) with respect to Harston. That rejection has been withdrawn. Although claim 18 was amended, and the applicant traversed the rejections of claims 18-19 under 35 U.S.C. 103(e), the rejections are maintained in a modified form to take the amended changes into account. These rejections are described later under their appropriate section, and associated comments are given under the Response to Arguments section.

Claim Objections

Claims 2-7, 12, and 14 are objected to because of the following informalities: For consistent labeling throughout the claims, it is suggested --the-- be added after "switch" on line 4 of both claims 3 and 14, and on line 2 of each of claims 5-7. This will minimize possible confusion between independent claim 1's "a transistor switch path" (line 4) and the "transistor switch" as presently recited within the dependent claims. [This objection was an oversight, and not described in the previous Office Action(s).] Dependent claims carry over objections from any objected to claim upon which they depend. Appropriate corrections are required.

Claim Rejections under 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. It is not understood how the amplifier, being in a pull-down mirror path, can be considered a "pull-up amplifier" as recited within claim 13, upon which claim 14 depends. Clarification and/or correction are required.

Claim Rejections under 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 18-19 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Harston, a reference cited in the previous Office Action(s). The circuit shown in Harston's Fig. 3 is understood by one of ordinary skill in the art as providing one type of method for reducing charge injection from a current source through a current switch into a load. MOS transistor MP1, with its gate coupled to bias voltage BIAS, is known to be a constant current source providing its given current level (controlled by the level of BIAS) to one of a pull-down mirror path MP3 and a current switch MP2 that are in parallel with one another (e.g. their upper terminals share a common connection between MP1 and MP2, and their lower terminals are both coupled to ground, at least indirectly). Current switch MP2 and pull-down mirror path MP3 operate complementary to one another (see their respective control signal DATAB and DATA) during normal operation of the circuit. Due to these complementary control signals, switch MP3 (in pull-down mirror path MP3) will be turned on when current switch MP2 is turned off, and vice versa. For this reason, MP3 can be deemed a pull-down mirror path as it performs an opposite function of MP2, and it pulls the current from current source MP1 down to ground when the path is conducting. Therefore, one of ordinary skill in the art would realize the constant/given current of current source MP1 would continuously flow to ground through one of the current switch MP2 and pull-down mirror path MP3 that is conducting at the time. Such a constant current flow from the current source would obviously reduce charge injection flowing to load 37.5Ω,10pF during the switching of the current flow between the load (due to current switch MP2) and the pull-down mirror path, thus rendering claim 18 obvious. With a constant current always flowing through current source MP1, one of ordinary skill in the art would know no gate charge would build up with respect to current source MP1. This will help prevent any

fast voltage transitions (e.g. see column 2, lines 9-13), which is understood to relate to one type of means for reducing charge injection. Current source MP1 is shown (and described – see column 2, lines 60) as a PMOS transistor, thus claim 19 is also rendered obvious.

Claims 10, 15-17, and 20 had been previously canceled.

Allowable Subject Matter

Claims 1-9, 11-12, 21, and 22 are allowed. There is no motivation to modify or combine any prior art reference(s) to ensure the pull-down mirror path comprises a switch and an amplifier as recited within claim 1, upon which claims 2-9, and 11-12 depend. For similar reasons, it is understood that the pull-down mirror path in both claims 21 and 22 also comprises both a switch and an amplifier. For example, see "a switch in a pull-down mirror path, comprising an amplifier" in claim 21 (lines 5-6), and "a switch in a pull-down mirror path" and "said pull-down mirror path comprising an amplifier" as recited in respective lines 5 and 8-9 of claim 22. These limitations correspond to the pull-down mirror path 450, switch MT, and amplifier 400 shown in the applicant's Fig. 5. [However, it is suggested the objections of claims 2-7, 12, and 14 be addressed/corrected to minimize possible confusion.]

Also, claims 13-14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Claim 14 carries over the rejection of claim 13, and both claims depend on allowed claim 1.

Response to Arguments

The applicant's arguments filed Jul 1, 2003 have been fully considered but they are not persuasive. The applicant argues that only one switch of Harston refers source current to the

load, and Harston also "clearly fails to maintain a given current level produced by the current source", teaches both switches to the current source will be OFF, and fails to teach the complementary use of a pull-down mirror path and a transistor switch to maintain a given current level produced by the current source.

All of these arguments are closely related to one another, but they fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references, unless one only considers certain terminology, such as "constant current", "given current level", "pull-down mirror path", and "charge injection". However, just because a reference does not clearly use the same type of terminology as the applicant's claimed limitations, this does not prevent a reference from providing circuitry that one of ordinary skill in the art would obviously understand as performing (or having) the same limitations are recited within the claims. The following discussions address the arguments:

Even though switch MP2 is the only switch of Harston that provides current from current source MP1 to the load, the claimed limitations do not clearly indicate the other switch provides current to the load. Lines 5-6 of claim 18 only indicate that the pull-down path and current switch operate "to ensure a constant current flow from said current source and to maintain a given current level produced by said current source." One of ordinary skill in the art would recognize that Harston's current source MP1 is configured in such a manner as to provide a constant current at its drain (i.e. lower terminal). This constant current, which it also understood to be at a given (desired) level determined by the voltage level of BIAS, will either be allowed to flow through switch MP2 or MP3, depending on which one is conducting. If the applicant's

argument/comment implies that the claimed pull-down mirror path also provides the current source's current to the load when the transistor switch does not, how is that performed by what is shown and disclosed? From the examiner's point of view, the only current that can be provided to the load once transistor switch 430 is opened will come from the charge stored on capacitor C1 within the pull-down mirror path 450 (e.g. see the applicant's own Fig. 5). However, that current is not considered current flowing from current source 420, because the current source's current will now be flowing into the pull-down mirror path. Also, the current from C1 will decrease in flow until it ceases once the voltage across load 440 and across R1,C1 reach the same level (e.g. at the same potential, no current will flow in parallel coupled capacitor lines unless leakage, and/or another current path is provided), thus the current flow to the load will not be kept at the constant/given level. In the case of Harston's circuit, current source MP1 provides a constant/given current flowing into the one current path (i.e. MP3 or MP2) that is conducting. The constant current is allowed to flow to ground through pull-down mirror path/switch MP3 when it is conducting. For example, if switch MP2 is open, and leakage current is not considered, where else can the current from current source MP1 flow except through 32? Likewise, when MP3 is opened, the current flow can only be through MP2 (discounting any type of leakage current). Therefore, each switch will effectively allow the entire amount of current flow from current source MP1 to flow through the conducting switch. A thorough explanation is requested to help clarify how limitations recited within claim 18 actually read over the examiner's understanding of how Harston's circuit will function,

The applicant indicates that Harston teaches away from the present invention because it "teaches that both switches to the current source will be OFF". This apparently refers to the

comments on column 1, lines 53-58 of Harston. The switches are only both turned off when two successive control pulses call for the output-line switch to be open, and wasted current can be reduced. However, it completely disregards the description on column 2, lines 64-68 ("The switch transistors MP2,MP3 include gates 30,32,...will always receive complementary control signals"), and what is clearly shown (and understood) in Harston's Fig. 3. During normal operation after power-up, one of ordinary skill in the art knows transistors of the same conductivity type will operate in a complementary fashion as long as they continue to receive complementary signals (e.g. DATA and DATAB) to control them. Therefore, during this period of normal operation, only one of Harston's switches MP2 or MP3 will be off at any one time. This operation will continue to allow current source MP1 to provide a constant current flowing through it as previously described above with respect to "1)".

Therefore, it is still believed the rejections described within this Office Action, and within previous Office Actions, are proper with respect to the broadest, reasonable interpretations of the claimed inventions allowed by the MPEP.

Any inquiry concerning this communication, or previous communications, from the examiner should be directed to Terry L. Englund whose telephone number is (703) 308-4817. The examiner can normally be reached Monday-Friday from 7 AM to 3 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Callahan, can be reached on (703) 308-4876. The fax number for TC 2800 is (703) 872-9318 for communications before a final action has been mailed, and (703) 872-9319 for communications after a final action.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

TLE
Terry L. Englund
27 September 2003

TIMOTHY P. CALLAHAN
SUPERVISORY PATENT EXAMINER
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